Few-shot training LLMs for project-specific code-summarization

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Abstract

Very large language models (LLMs), such as GPT-3 and Codex have achieved state-of-the-art performance on several natural-language tasks, and show great promise also for code. A particularly exciting aspect of LLMs is their knack for few-shot and zero-shot learning: they can learn to perform a task with very few examples. Few-shotting has particular synergies in software engineering, where there are a lot of phenomena (identifier names, APIs, terminology, coding patterns) that are known to be highly project-specific. However, project-specific data can be quite limited, especially early in the history of a project; thus the few-shot learning capacity of LLMs might be very relevant. In this paper, we investigate the use few-shot training with the very large GPT (Generative Pre-trained Transformer) Codex model, and find evidence suggesting that one can significantly surpass state-of-the-art models for code-summarization, leveraging project-specific training.